CLAIMS

What is claimed is:

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Ι.	711	apparatus	Combusing

a flow manager;

a remote logical port (RLP) model to model a remote physical port (RPP); and

a trunk scheduler to schedule transmission units direct to the remote physical port.

- 10 2. The apparatus of claim 1 wherein the flow manager comprises: a flow shaper; and
 - a flow parameter database.
 - 3. The apparatus of claim 1 wherein the flow manager comprises: a discard policy that is able to differentiate between the discard rates of at least two flows; and
 - a flow parameter database.
 - 4. The apparatus of claim 1 wherein the flow manager comprises: an RLP scheduler; and a flow parameter database.
 - 5. The apparatus of claim 2 wherein the flow manager further comprises:
- 25 an RLP scheduler.
 - 6. The apparatus of claim 1 wherein the RLP model comprises: an RLP data structure to hold data indicating characteristics of the RPP; and
- an RLP traffic shaper to make a transmission unit eligible consistent with the characteristics of the RPP.

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- 7. The apparatus of claim 5 wherein the flow manager comprises a plurality of queues, one queue for each flow directed toward the RPP.
- 5 8. The apparatus of claim 7 wherein shaping and scheduling are performed by manipulating pointers to the queues.
 - 9. The apparatus of claim 1 wherein the trunk scheduler statistically multiplexes an aggregate of the flows directed to a plurality of RPPs.
 - 10. The apparatus of claim 1 wherein the trunk scheduler operates in a weighted round robin non-work conserving manner.
 - 11. The apparatus of claim 1 further comprising one of an OC-3 port and a DS-3 port.
 - 12. A system comprising:
 - a broadband communication link;
 - a demultiplexer coupled to a plurality of physical ports and the broadband communication link; and
 - a network element coupled to the communication link, the network element modeling the plurality of physical ports and providing a two-tier hierarchy of shaping and scheduling of flows directed to the plurality of physical ports.
 - 13. The system of claim 12 wherein the network element comprises: a first flow shaper to shape a plurality of flows directed to a remote physical port (RPP);
- a first scheduler to schedule the flows shaped by the first flow shaper to yield a scheduled flow;
 - a second flow shaper to shape the scheduled flow; and a trunk scheduler to schedule the flow shaped by the second flow shaper for transmission to the RPP.

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RPP.

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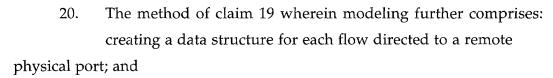
- 14. The system of claim 12 further comprising:

 a plurality of data structures populated with data indicating characteristics of a remote physical port (RPP); and

 a database populated with flow parameters.
- 15. The system of claim 14 wherein a one-to-one correspondence exists between RLP data structures and RPPs.
- 10 16. The system of claim 13 wherein the network element comprises: a queue for each flow directed at a physical port and wherein shaping and scheduling are performed by pointer manipulation.
 - 17. A method comprising:
 modeling a plurality of remote physical ports (RPP) as a plurality
 of remote logical ports (RLP); and
 reflecting quality of service from a control aggregator to the
 plurality of RPPs.
 - 18. The method of claim 17 wherein reflecting comprises:
 shaping a plurality of flows directed to a RPP into a plurality of shaped flows;
 scheduling the shaped flow into a scheduled flow;
 shaping the scheduled flow into a shaped scheduled flow; and scheduling the shaped scheduled flow for transmission to the
- 19. The method of claim 17 wherein modeling comprises:populating a database with an entry indicating an ability of an30 RPP to transmit data.

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manipulating the data structure to indicate eligibility of a transmission unit consistent with the ability of the RPP to transmit data.

- 21. The method of claim 17 further comprising: statistically multiplexing the flows from the plurality of RLPs to the plurality of RPPs.
- 22. The method of claim 17 wherein a one-to-one correspondence exists between the RLPs and the RPPs.

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